

SARC

June 2017

The Surrey Amateur Radio Club

Communicator

The Newsletter of the Surrey Amateur Radio Club

SURREY
AMATEUR RADIO CLUB

(778) 806-4662

Mailing Address
12144 - 57A Avenue
Surrey, BC V3X 2S3
SARC@ve7sar.net

Operations & Training Centre
14265 - 57 Avenue

EDITOR
John Schouten VE7TI
Communicator@ve7sar.net

WEBMASTER
Jeremy Morse VE7TMY
Webmaster@ve7sar.net

REPEATER MANAGER
Sheldon Ward VA7XNL
Repeater@ve7sar.net

MEMBERSHIP
John Brodie VA7XB
Membership@ve7sar.net

NET MANAGER
Robert Fishwick VA7FMR

QSL MANAGER
Heinz Buhrig VA7AQ

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At The Last SARC Meeting

General Meeting Minutes

Wednesday, May 10, 2017

Stan Williams welcomed everyone to the meeting.

Announcements

A welcome was extended to all the newly-licensed amateurs in attendance. John Schouten VE7TI reported that 20 students wrote the exam, all passed, with 10 achieving honours.

Jinty Reid VA7JMR – Reported on Christmas party plans. Each year we need to find a location that can accommodate our growing membership and also provide a good dining experience. Newlands in Langley has a buffet which is normally $19.00 plus tax/gratuities but around Christmas their price changes to $23.43 which includes 5% GST and 15% gratuity. We need space for presentations and awards etc. We would get their smaller ballroom for $250, which might increase our cost per up to $30 per person. Newlands provides great desserts as well as tea/coffee and they are licensed for alcoholic beverages. Saturday, Dec 9th. has been chosen, with the Kalmar booked as backup. The Kalmar has new owners but the same kitchen staff.

Considering that we would be committed for 60 attendees, John VA7XB moved that we invite SEPARS and LANGLEY club right away. Seconded by Dixie Mogg VA7DIX, and motion approved. Stan will contact these groups. A show of hands indicated support by many in the room.

Financial Update

Provided by Scott Hawrelak VE7HA

OTC/Clubhouse – John Brodie VA7XB

The plan is to spend our BC grant before the end of this fiscal year.

ICBC insurance for the old yeller antenna trailer is up for renewal. Two alternative suggestions from the floor were that: a) we should consider renewing ICBC insurance for field day use or b) consider having just a basic level of insurance as it should be insured while stored/parked on municipal property.

QSL Manager – Heinz Buhrig VA7AQ

At the last meeting it was suggested that new QSL cards be ordered. The Executive will consider further.

Field Day – Sheldon Ward VA7XNL

Field day is June 24-25 weekend. We didn't get approval for the Joe Brown Park as a softball tournament has priority for use of the field during that weekend. Confirmation is still awaited on the Grandview location but approval is expected. Sheldon has prepared a list of duties and items that members need to bring and set up for field day.

Operator signup sheets will be sent out soon and operating positions will be open to everyone with priority given to those who have some experience with contesting and use of the software. Use of both tower/antennas is under consideration. A satellite contact may be attempted.

Nell Wrotniak VA7PE has volunteered for food duties. Friday setup day will be pizza in the evening provided by the club.

Saturday lunch will be hotdogs, chips, and Sunday breakfast will be pancakes and sausages. Nothing is yet planned for Saturday dinner.

There will be a fire pit (propane) Friday and Saturday evenings, so bring your own chairs. Sheldon invites volunteers to participate with the field day committee.

Foxhunt – Anton James VE7SSD

To access Crescent Park in White Rock, enter off 129th Ave. at the North part of the park (it's a big park so look up the entrance before you go).

Sat May 20th.

8:30-9:30 training and prep

9:30am start

12:30 BBQ—$10 for the BBQ

Lots of members will be around to help train/coach and extra equipment. If you have a 2m handheld bring it along.

Coffee Break

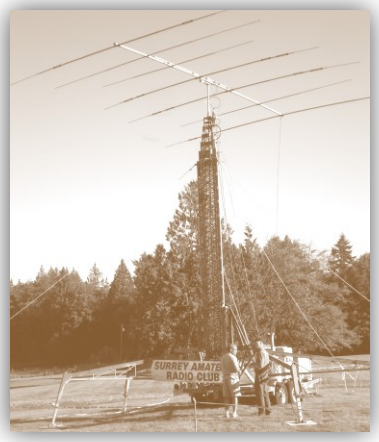
After Alex's presentation, the meeting was adjourned at 9:05pm

Minutes prepared by Jeremy Morse VE7TMY

Presentation by Alex Danese VE7ADA

Alex provided a presentation on his modified HF radio to which he has added SDR capabilities. The full presentation is described in an article starting on page 4.

~ Jeremy VE7TMY
Secretary



The **SARC Communicator** is published monthly except July and August for members of the Surrey Amateur Radio Club.

To subscribe, unsubscribe or change your address for e-mail delivery of this newsletter, notify SARCcommunicator @ ve7sar.net

Non-members living in the Greater Vancouver area are asked to subscribe with a $5 annual donation towards our Field Day fund.

SARC maintains a website at www.ve7sar.net and a blog at ve7sar.blogspot.ca that includes past issues of The Communicator, club history, news, photos, videos and other information.



Kalmar Koffee Klatch Reminder

The SARC Weekly Koffee Klatch is on Saturday at the Kalmar Restaurant at 80th and King George Hwy in Surrey at 9:00 am. Bring your significant other, bring your family, see old friends and have fun.

On The Cover…

Alex Danese VE7ADA is shown with his remarkable SDR add-on to his HF transceiver. Alex provided a show 'n tell at the May General Meeting. Another example of how radio amateurs innovate on the cutting edge of technology. Read more starting on page 4.





At The Last SARC Meeting

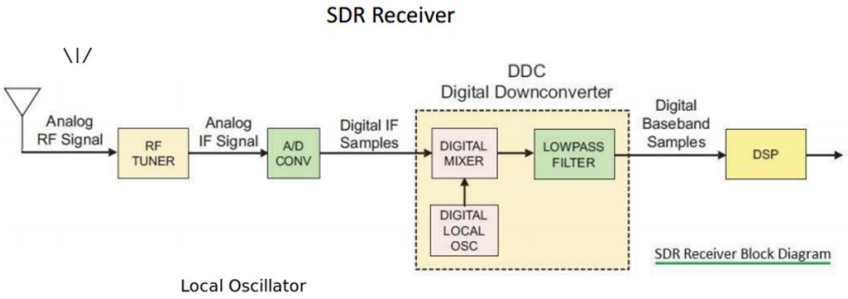
Alex Danese VE7ADA

The SDR Project

The full presentation is available at ***http://ve7sar.net/talks/AfedriSDR/AfedriSDR.pdf***

Software-defined radio (SDR) works by using software to replace most of what is traditionally hardware (e.g. mixers, filters, amplifiers, detectors, etc.). Hardware is still needed for RF front-end and ADC (Analog to Digital Converter) / DAC (Digital to Analog Converter)

A traditional SRD Receiver looks like this:



In order to get a complete system we need both hardware and software (PC). A variety of hardware is available from low cost to high. We need to find a balance of performance and price point.

Low Cost Choices:

- RTL 2832U – Realtek SDR Dongle 24 – 1766Mhz $10 - $30

Medium Cost:

- FunCube DonglePro+ 150KHz – 2.050GHz $200
- Hack RF One 10MHz – 6GHz $299
- Afedri SDR-Net 100KHz – 35Mhz $259
- SDR Play 1KHz – 2Ghz $170

High Cost:

- Elad FDM-S2 9KHz – 52MHz $529
- Perseus 10KHz - 30MHz $1000
- RF-Space SDR-IP 10KHz – 32Mhz $3949

Alex selected the medium cost Afredi SDR receiver for HF use.

Pros:

- Good performance for the price
- Easy setup, configuration & assistance
- Wide Bandwidth 2 MHz up to 10 Mhz
- Direct Sample (does not need external sound card)

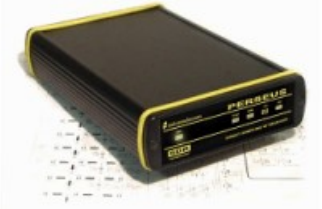
Cons:

- Low sensitivity with weak signals
- High noise floor
- Broadcasting intermodulation (no band filters)

To have a performing SDR receiver for ham radio use, combined with an amateur rig, we need the following:



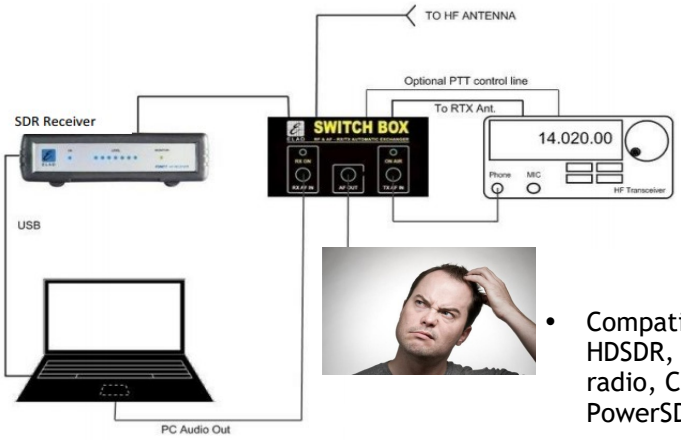






Various SDR Module options

- A switch box $100-150
- Low noise preamplifier $25-50
- Band filters $35-50



This is a bit complex and expensive, so we need a different approach: why not use a commercial antenna preamplifier considering that it already has a built-in switch box, a pre-selector with a low noise preamplifier—and can be found used for $15-$25?

MFJ 1040C & AMWCO PT-3 Preamplifiers

In this case, the Afedri SDR-net receiver was chosen because of the wide bandwidth, community support on the Internet and the ease of installation, as it does not require a dedicated sound card.

To transmit we can use any radio, but one with CAT control is best since you'll want to have the dial remain in sync with the software or vice versa. Moreover, this system allows you to keep the radio receiver and use the SDR just as a visual pan-adapter.

Afedri SDR-Net Features

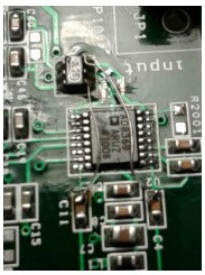
- 100 kHz to 35.00MHz continuous frequency range
- Direct sampling (doesn't need dedicated sound card)
- DDC - Digital Down-Conversion
- 12- bit 80 MSPS A/D conversion
- Up to 1.85MHz recording and processing bandwidth
- Waterfall display functions, when used with appropriate software
 - Recording and playback, when used with appropriate software
 - Sensitivity - MDS -136 dBm at 500Hz bandwidth
 - USB 2.0 (Full Speed) interface (up to 200Khz)
 - LAN interface (up to 2 Mhz)
- Compatible with: Linrad, Winrad, HDSDR, Studio1, SDR Console SDR-radio, CuteSDR, SdrDX, Quisk, PowerSDR_mrx
- Powered from USB or external power supply 7-10VDC
- Case dimensions 120mm deep x 78mm wide x 27mm high
- Low cost - $259

Several software packages are freely available, but the one Alex chose is called "SDR Console" and version 2 has remote control capability. The Afedri SDR-Net also supports this and you can remotely connect to your home setup. The software allows you to place it on a public network or limit it to yourself for private access.

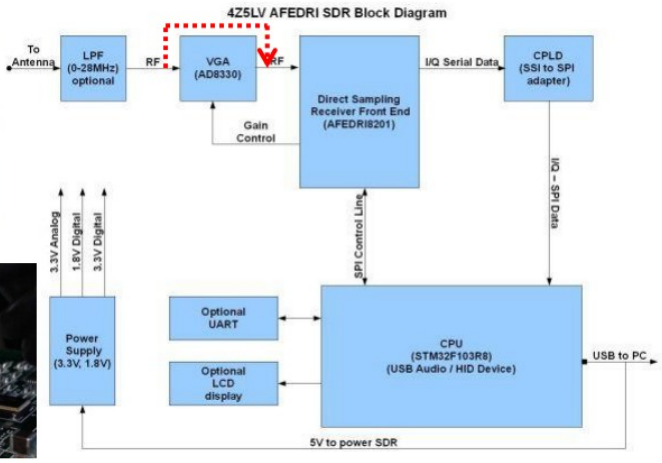


Switch box options

Below: The Afredi board and amended block diagram.









Noise Floor comparison between original VGA and external preamp. Sensitivity shifts from -118dBm to 127dBm

For remote voice transmission, the software Alex used is the Zello walkie-talkie app (PTT phone software), and it performed much better than Skype. The other ways to remote your SDR are found on the WebSDR web site, Remoterig system and Remotehams network.

For Amateur practical use, one of the first things needed was to bypass the factory wideband RF antenna amplifier (VGA—Variable Gain Amplifier) built on the Afedri board. It's the weak point of this SDR due to a high noise floor of 11db and its low dynamic range. When using this onboard amp you will lose weak signal intelligibility. Now there is a special model of Afedri board with a built in bypass option. If you get one without the bypass it can still be done but it is very delicate procedure.

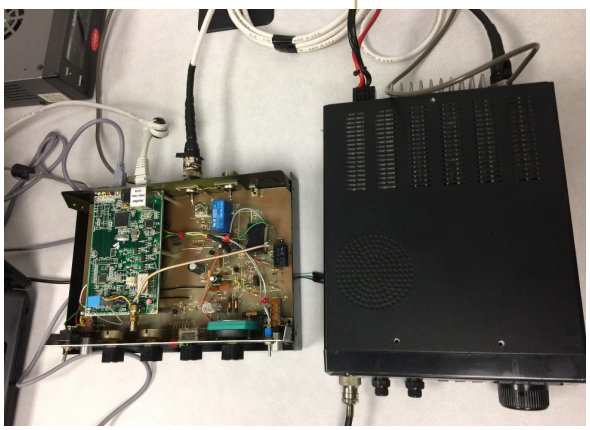
Later a relay mod was added to be able to switch back to using the on board RF amplifier which is wideband, and needed for multiband remote control. The pre-selector low pass filters are manual and not adjustable remotely.

To further improve the performance of the preamplifier, Alex changed the original gain amplifier gas-FET with a low noise BF-981 gas-FET. This mod resulted in improved gain and lowered the noise floor from 4db to .07db!

He also did some work to place the Afedri into the Ameco preamplifier including adding switches that allow changing the onboard VGA to an external preamp, and selecting between the SDR receiver or the rig receiver, or both together, as well as an external PTT control.

N.B: the MFJ 1040 preamp already has these switches and a PTT control factory installed.

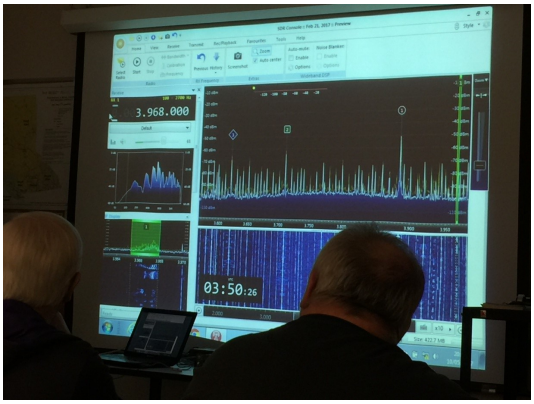
Below: The Afredi mounted in an Ameco switch box.



Switching between the preamp and the on-board VGA was remarkable in its noise rejection capability.

Alex performed a live demo of the SDR Console software running and several amateur signals and broadcast stations were heard. Those attending the presentation were invited to visit the setup after the meeting and ask further questions of Alex.

~ Jeremy VE7TMY





Alex and his SDR Project

HAM NEWS

Tidbits from the Amateur Radio World

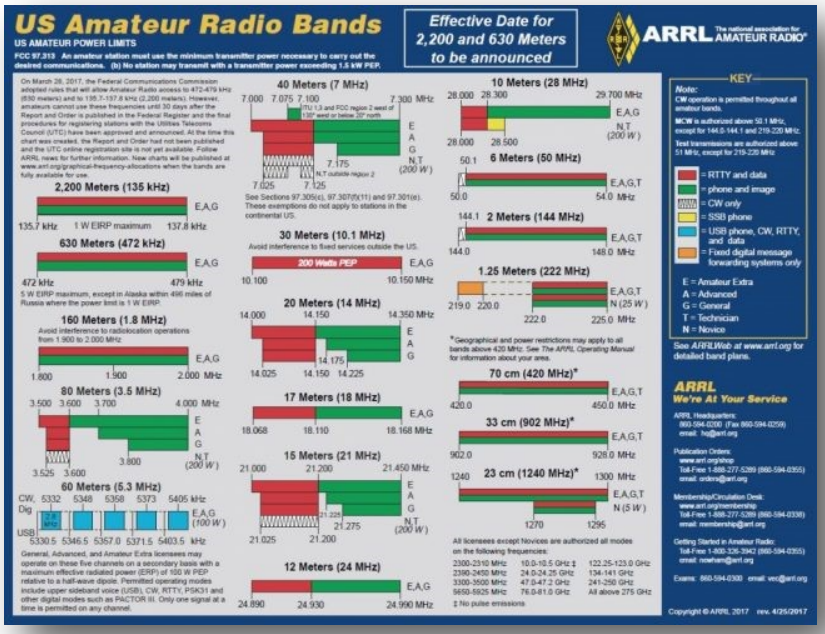
ARRL Updates US Frequency Bands Chart

The ARRL has updated their downloadable Frequency Band Charts.

The ARRL also noted the following on their download page:

NOTE: The new 630-meter and 2200-meter bands are ***not yet available for Amateur Radio use***. The effective date of the recent FCC *Report & Order* granting these allocations has not yet been determined, and until the start date has been set, it is *not* legal under an Amateur Radio license to transmit on either band. The FCC will publish a notice in *The Federal Register* "announcing such approval and the relevant effective date." ARRL will announce the UTC notification procedures *and* the effective date to use these new bands as soon as these are known.

A licensed amateur radio operator in Tennessee who had already set up an active beacon on the 630 meter band has pulled the plug. No doubt, this was why the ARRL posted a special note.

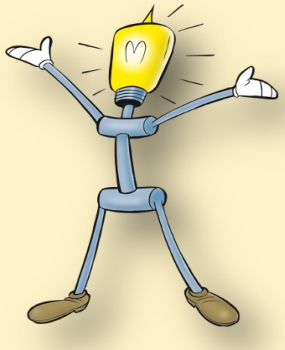


- Frequency Bands Chart [PDF] (black/white)
- Frequency Bands Chart [PDF] (greyscale)
- Frequency Bands Chart [PDF] (colour)

John Fallows VE6EY of Calgary, Alberta published a series of articles called the "Arduino Ham Radio Starter Kit". The purpose of this information is to encourage more hams and their clubs to engage with the local maker community as a gateway to amateur radio. These articles explain Arduino basics in a ham radio context. They contain many suggestions about how amateurs can use Arduinos, as well as how a ham club can engage other makers in hobby activities.

Please take a moment to review the Arduino Ham Radio Starter Kit articles.

The URL is: http://play.fallows.ca/wp/series/arduino-ham-radio-starter-kit/



Operational Training Centre News

John Brodie VA7XB



A Functioning Operations & Training Centre Moves Closer to Reality

The donations by members of radio equipment, furniture, rack panels, UPS, modems, computers, switches and batteries, and especially their hundreds of volunteer hours, have helped keep the costs manageable

It was just over a year ago that the City of Surrey granted SARC the rent-free use of space in the North Annex of the former City Hall in order for SARC to set up an Operations and Training Centre (OTC). This was made possible through the efforts of Councillor Mary Martin and City Manager, Vince Lalonde. In granting this to SAR, the contributions of SARC members in providing voluntary community service to Surrey over 4 decades was cited as the justification.

Soon after the announcement, club members and the public rose to the occasion by donating surplus items, which the club supplemented with further purchases, and which enabled us to get set up shop in a rudimentary way. The City allowed us to set up our portable tower in the parking lot and surrounded it with protective concrete barriers, installed an electrical ground system for our equipment, and punched holes in the upper floor and basement walls to facilitate passage of cables. They also installed a 208v power outlets in the radio room. We were given free access to the roof of the building, which enabled us to run cables and grounds and erect VHF/UHF antennas including a microwave dish for future connection to the BC Warn system (for fail-safe Internet connection). We soon made use of the nearby trees to put up a Carolina Windom antenna for the 40 and 80m bands to supplement the tri-band beam on the tower for the 10, 15 and 20 m bands.

With the use of donated furniture, a meeting room in the OTC has been well utilized for training events, antenna workshops for the basic licensing class, and occasional meetings. The radio room has been set up for 3 HF operating positions and 1 VHF/UHF position using donated or borrowed equipment.

For the first time ever, Field Day in 2016 was held at the OTC rather than in the usual Grandview Heights site in order that the event provide a focus for getting the OTC closer to a functioning state (this year we are once again back in the field). Other rooms at the OTC are used for office, equipment storage and a future workshop. Did I mention that a kitchen, complete with a refrigerator and microwave oven, is available for our use?

There have also been a few frustrations, e.g. our 2016 application for a Gaming Grant was turned down for what we believe are invalid reasons, the most prominent of which was that our bylaws, which do not allow an “associate (i.e. non-licensed) member” to be elected as a Director, were deemed to be too “exclusive” – even though the opportunity to become a full member is available to all members of society. In order to qualify for a gaming grant in future, SARC’s bylaws will have to be amended, and such a motion is planned for the June AGM. The specific wording of the recommended bylaw changes can be found elsewhere in the Communicator.

What other frustrations? Well, we still do not have heating and cooling in the OTC, which is not a significant problem in the spring and fall but becomes important in the other seasons. Also, the radios are subject to a high level of RF noise, which appears to be originating from switches and a UPS in the electrical services room. Efforts to date to remedy the RF noise have not been successful, despite our detailed attention to grounding, the replacement of all coax with double-shielded cable and liberal installation of ferrite RF chokes throughout. Also, the City-provided Internet connection has data restrictions which do not allow its full use and we have been unsuccessful in getting a higher level of service. Neither has a BC Warn connection been completed to date and it appears that the antenna needs to be higher on the building to achieve a line-of-sight connection to our repeater system at Concord tower. However, most of these issues will be resolved with persistence.

But … in December 2016, SARC was invited by MLA Marvin Hunt to submit an application for a BC Community grant. In March 2017, the grant was approved and so it was full speed ahead to begin activating our latent plan to upgrade the radio room. The OTC Committee made the decision to fully spend the grant funds before the end of the 2016/2017 fiscal year and so moved into high gear to accomplish Phase 1 of the larger goal.

The over-riding principles established by the Executive were that: 1) the equipment should be uncompromisingly state-of-the-art quality, 2) only one station would be fully equipped, rather than more at a lesser quality, 3) it should be ultimately capable of remote operation, for the benefit of members who do cannot set up their own station at home and 4) radios should be capable of operating from emergency power when commercial power is unavailable (implying batteries charged and backed up by UPS).

Deciding on the equipment to be purchased was a challenging exercise with many differing opinions expressed, but eventually a consensus was reached. Over the last 2 months, orders have been placed for: a Flex 6700 software defined radio and an Alfa Spid antenna rotator, both of which are expected to arrive by mid June. Accessories for the radio have also been acquired and the 12v power system, complete with circuit breakers and power monitoring, has been installed at one station. The antenna patch panel with triplexers and bandpass filters for bands 10-160 m is under modification so that we will have a rack-mounted version for the OTC and a separate, portable unit for Field Day use.

What is our plan to build on this success? I'm glad you asked that question. A new gaming grant application will be prepared and submitted over the summer months requesting funds to complete Phase 2 of the program to equip the second of three operating stations. In doing so, we will have bylaw changes behind us and, yes, you may assume we will give particular attention to any other apparent deficiencies of the previous application.

I am grateful to OTC Committee members who have met on several occasions to plan for purchases, to debate the nature of improvements, to conduct repairs and to attend work parties. The donations by members of radio equipment, furniture, rack panels, UPS, modems, computers, switches and batteries, and especially their hundreds of volunteer hours, have helped keep the costs manageable and are much appreciated as we move forward.

~ John VA7XB



Emergency preparedness starts at a young age. 12-year old Cameron Soo VA7ROI came out to operate at the OTC for his first Field Day. After a brief demo he took over unassisted and made an impressive showing.



Back to Basics

John Schouten VE7TI

From The Basic Question Bank

What is a skip zone?

B-007-003-001

What is a skip zone?

A. An area which is too far away for ground-wave propagation, but too close for sky-wave propagation

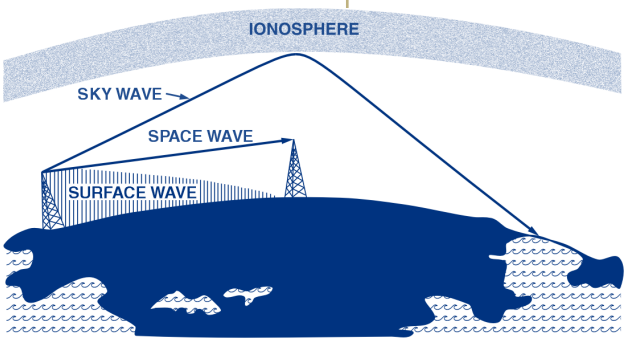
B. An area which is too far away for ground-wave or sky-wave propagation

C. An area covered by sky-wave propagation

D. An area covered by ground-wave propagation

There are quite a number of questions in the Canadian Basic Question Bank that deal with propagation, hops and skip. Your exam is bound to contains one or more questions on this subject. In practice, it is where the 'magic' of radio comes in. We send a signal into the aether and you never really know where in the world it will be heard. Sure, we can apply solar predictions, propagation reports, and mix in a measure of experience but it is still an uncertain science.

There are two principal ways in which electromagnetic (radio) energy travels from a transmitting antenna to a receiving antenna. One way is by surface (ground) waves and the other is by sky waves. Surface waves are radio waves that travel near the surface of the Earth (surface and space waves).



Sky waves are radio waves that are reflected back to Earth from the ionosphere.

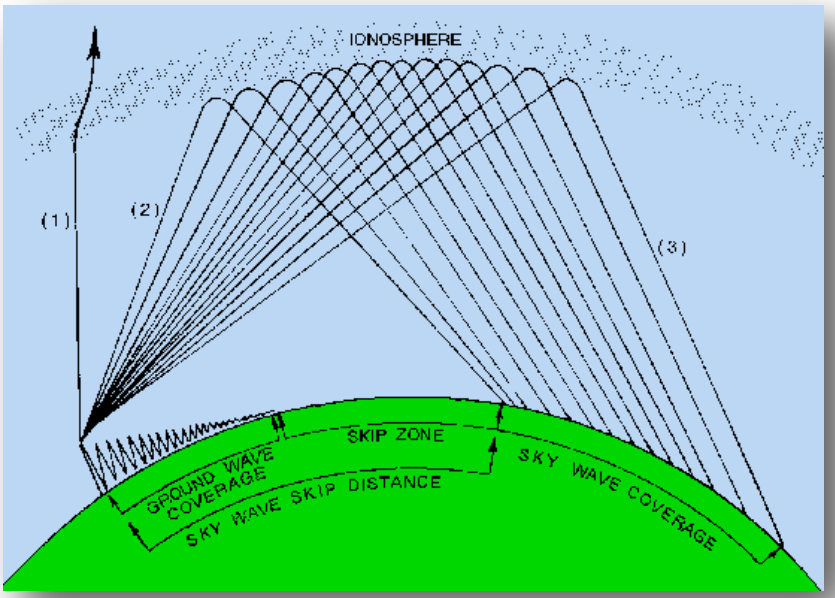
Radio waves from a particular transmitting antenna do not all get refracted by a particular layer of the ionosphere; some are absorbed, some refracted while a portion escapes to the next layer. At this higher layer, there is a possibility of this radio wave being bent downwards to earth again. This bending happens because each layer of the ionosphere has a refractive index that varies from that of the others. Because of the differing heights of refraction, or apparent reflection, the radio waves hit the earth surface at different points hence generating the skip distance. Skip distance is greatest during the night when the ionosphere is the highest.

On the diagram on the next page, note the relationship between the sky wave skip distance, the skip zone, and the ground wave coverage. The skip distance is the distance from the transmitter to the point where the sky wave is first returned to Earth. The size of the skip distance depends on the frequency of the wave, the angle of incidence, and the degree of ionization present.

We do have some control over the direction of our transmissions through the selection of operating frequency, the use of directional antennas and by the angle of radiation. The latter is greatly affected

by the height of the transmitting antenna above ground.

Near Vertical Incident Skywave (NVIS) antennas for example, are designed for, and used at frequencies not to use skip. The purpose of NVIS is to communicate locally and regionally, out to a few hundred miles, with moderate power, simple antennas, and no skip zone. This is useful in emergencies where HF coverage up to 500-600 miles is required. NVIS is typically used on 160, 80/75, 60, and 40-meter bands by Amateur radio operators using relatively low horizontal wire dipole antennas.



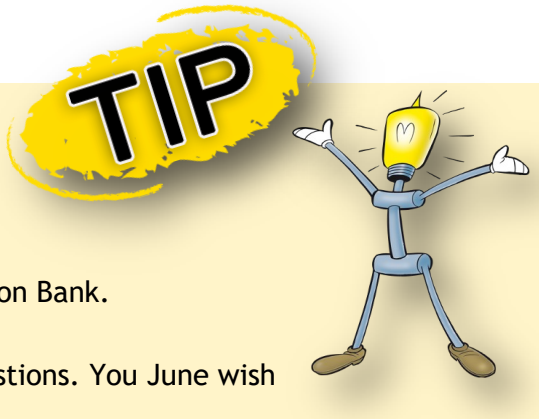
NVIS propagation is generally considered to be F-layer ionospheric reflection at angles of 70-90 degrees. It is skywave propagation without the usual skip zone.

A Communicator Fall issue will have more information on NVIS antennas and a project for building one.

The correct answer to our question therefore is:

A. An area which is too far away for ground-wave propagation, but too close for sky-wave propagation.

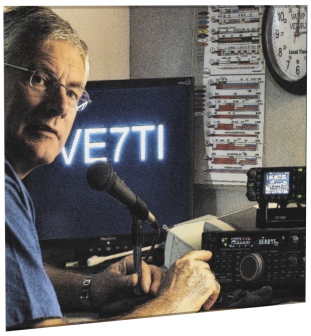
~ John VE7TI



Study Links

Whether you are new to the hobby or brushing up on skills, you June find these study links helpful:

1. RIC-7 is the entire up-to-date Industry Canada (IC) Basic Question Bank. http://tinyurl.com/CanadaBasicQB
2. There is a RIC-7 that has some explanations along with the questions. You June wish to review it as RIC-7 2014rev08.05 with explanations.
3. The Amateur Radio Exam Generator is at: https://www.ic.gc.ca/eic/site/025.nsf/eng/h_00040.html
4. The ExHaminer Study software for Windows is at: https://wp.rac.ca/exhaminer-v2-5/
5. The Ham Study website has a flash card approach to learning the Question Bank, both Basic and Advanced. It is at: https://hamstudy.org



QRM

...from the Editor's Shack

Do you have a photo or bit of club news to share?
An Interesting link?

Something to sell or something you are looking for?
eMail it to communicator@ve7sar.net for inclusion in this column.

To assist you getting to the 'right' person, our contact addresses:

president@ve7sar.net

vicepresident@ve7sar.net

secretary@ve7sar.net

treasurer@ve7sar.net

communicator@ve7sar.net

webmaster@ve7sar.net

repeater@ve7sar.net

membership@ve7sar.net

directors@ve7sar.net

As you may recall, Kevin McQuiggin VE7ZD provided the March meeting with an excellent presentation on GNU Radio. His presentation is on the SARC website. For those not present, GNU Radio is a free & open-source software development toolkit that provides signal processing blocks to implement software defined radios (SDR). It can be used with readily-available low-cost external RF hardware to create SDRs, or without hardware in a simulation-like environment. It is widely used in research, industry, academia, government, and hobbyist environments to support both wireless communications research and real-world radio systems. Think of it a building blocks to create working radios of all types on your computer, whether Windows, Mac or Linux based.

GNU Radio performs all the signal processing. You can use it to write applications to receive and transmit data with radio hardware, or to create entirely simulation-based applications. GNU Radio has filters, channel codes, synchronization elements, equalizers, demodulators, vocoders, decoders, and many other types of blocks which are typically found in signal processing systems. More importantly, it includes a method of connecting these blocks and then manages how data is passed from one block to another. Extending GNU Radio is also quite easy; if you find a specific block that is missing, you can quickly create and add it.

Kevin has offered a free workshop on using the software. He has a self-contained bootable USB memory stick with the necessary GNU Radio software image available. So as long as your computer can boot from USB, you don't have to permanently install a thing unless you wish too. Once you unplug the 'stick' it is gone from your device. A 'live' DVD image is also available for computer.

To make a live working version you will need an RTL USB dongle featuring the widely supported Realtek RTL2832U and R820T chipsets. These are readily available online from Amazon or eBay for as little as Cdn $10.50 with free shipping. Not a bad investment for an SDR receiver. The workshop will be on a Saturday morning in August, which should provide plenty of time to obtain your SDR dongle. If you are interested, please send an email to communicator@ve7sar.net with the subject GNU Radio.



A GNU capable SDR Dongle

Link to a YouTube demo of a GNU Radio CW Receiver

Sticker seen on a mobile rig: "Warning 12,000 millvolts!"



Page 13—News You Can Lose

The Lighter Side of Amateur Radio

Confused Hams Show Up At Hara

K5PO, On the Scene

DAYTON, OHIO — The Dayton Hamvention has moved on to bigger and better things in the Greene County Expo Center, but some hams aren't ready to quit old Hara Arena just yet.

Hara Arena, which has hosted Hamvention since seemingly the dawn of time, had grown ratty and fell into disrepair. The Dayton Amateur Radio Association finally made the bold but necessary move to a newer, better location, but some hams seem to be stuck in old habits.

"I showed up at 4:30 a.m. here at Hara just like I do every year," said ham operator Boyd Flauderson, 78, from the Hara parking lot. "You gotta get here early to get in line for the scooters," he shared.

"The Hara flea market is a little smaller than last year," noted Rodrick Aerent, 93, who had just arrived on a red-eye flight from his home country of Scotland.

When informed that Hamvention was no longer at Hara, the steadfast attendees seemed skeptical.

"I've already sold two of these Hammerlund amps this morning. I've never heard of the Greene County Expo Center. I'm staying right here at Hara," remarked an unshaken parking lot vendor. "Hamvention not at Hara… ha! Next you're going to tell me that the FCC is going to drop the Morse requirement–not going to happen, pal!"

"I'm not sure where the food vendors are this year," questioned entrepreneurial ham Larry Smalls. "But I've started selling Bud Light for $10 a piece from the cooler in my mobile."

Dayton Police were called to Hara to address the apparent trespassers, but Dayton Officer Mike Lowry ended up chatting with a VE that had set up a pop-up test session. The officer decided to sit for his Technician's exam.

As of press time the event was going strong at Hara, seemingly without most hams noticing any change.

~Ham Hijinks





The SEPAR Report

Roger Andrews VA7VH

SEPARS 2017 Annual General Meeting

The SEPAR Society had its Annual General Meeting on the 25th of May. We had a good turnout of 19 members and we had a lot to discuss. There are a number of changes in the Directors this year. Fortunately there won't be any judicial recounts and it hasn't taken 2 weeks to learn the results of our election!

Below is a photo of the new Board of Directors. From the left to right:

Stan Williams (VA7NF) remains as a Director,

Roger Andrews (VA7VH) President/Coordinator (with service dog Marlee),

Alan Saunders (VA7BIT) Secretary (past president),

Peter Gauld (VE7PGX) returning Director,

Rob Gilchrist (VE7CZV) is a Director again,



Drew Elvins (VA7DRW) continues as Treasurer,

John Schouten (VE7TI) is back on the Executive again after some years and is now the Vice President.

Missing from photo: Ron Casey (VE7VTA), also a Director.

I'm very proud to have been selected as the new President/Coordinator. I hope I can help point SEPARS in a direction that will continue to serve the community but also inspire its members to participate.

Alan Saunders (VA7BIT) has been president for the past 2 years. We all wish to thank him for taking on that position for as long as he did. It's clear that he has been very busy with work and having a new president will give him more time for himself and his family. Thanks for being there Alan! I spoke to Alan after the election and he told me that, if in the future he is called upon again, he will always be there. It's good to know that we have people in our organization that feel strongly about its benefits and will always step up when needed. Thank you.

We hope that Peter (VE7PGX) will continue to innovate our training as he has in the past. He has new ideas and intends on visiting the SARC Operations and Training Centre to see how he can integrate the OTC into the SEPAR training.

At the meeting there was a discussion about last years training. The result of that training culminated in an Exercise on April 22nd 2017. Peter made an excellent point regarding an issue we had, passing traffic on simplex during the exercise, "It's about what to do when things go not as planned." While Peter and Alan would have preferred to

have done more with Digital communications, the organization needed a return to basics. However, digital communications for NTS messaging is a direction that we must head in, if we are to pass traffic efficiently. It will be a good part of the focus of the 2017-18 training. Drew (VA7DRW) did a training session on digital communications in our 2016-17 training cycle. This will be expanded on in the near future. We hope Drew will be there for us again. We all gave thanks to Drew for the time he spent with that training.

Stan (VA7NF) had an opportunity to try out the SEPAR trailer with the newly installed cabinets. He used the trailer at the Richmond club Swap Meet. He found it was nice to not find things on the floor when you arrive at you destination. I know personally from listening to some other nets that those who saw the trailer where quite impressed.

Stan (VA7NF) has asked that SEPAR participate in making the radio room and office at the Operation Training Centre useful as another SEPAR emergency operations centre focusing primarily on HF, and as a backup.

We discussed how we would like to see more integration with SARC. SEPAR is a communication tool for the City of Surrey, but that does not prevent us from partnering more closely with SARC during field day and HF contests. John (VE7TI) has told me, and I agree, that HF contesting is a great way to become an excellent net controller in situations where management of incoming contacts and traffic is hectic.

Hopefully we will see more SEPARS member participation in exercises and training in the future.

We have some work ahead of us. The new directors will be tasked with amending our bylaws and societies registration as required by the new BC Societies Act.

I personally look forward to our first directors meeting and moving forward to keep SEPAR relevant, as I am sure our whole Board also does.

73

~ Roger Andrews VA7VH
SEPARS President/Coordinator

> *...digital communications for NTS messaging is a direction that we must head in*

Surrey Emergency Program Amateur Radio



The SEPARS 2017 AGM



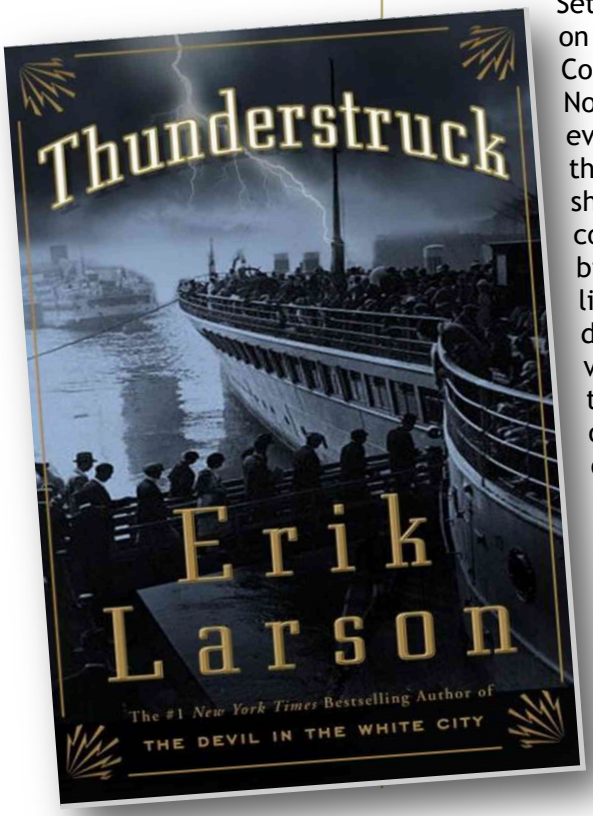
The Rest Of The Story…

Thunderstruck

… the factual and interwoven stories of two men, Hawley Crippen, a very unlikely murderer, and Guglielmo Marconi…

Last month we wrote in QRM about Marconi and Maskelyne, and their attempts to discredit each other. There was mention of a book, *'Thunderstruck'* written by Erik Larson.

Erik Larson tells the factual and interwoven stories of two men, Hawley Crippen, a very unlikely murderer, and Guglielmo Marconi, the obsessive creator of a seemingly supernatural means of communication, and how their lives intersect during one of the greatest criminal chases of all time.



Set in Edwardian London and on the stormy coasts of Cornwall, Cape Cod, and Nova Scotia, Thunderstruck evokes the dynamism of those years when great shipping companies competed to build the biggest, fastest ocean liners, scientific advances dazzled the public with visions of a world transformed, and the rich outdid one another with ostentatious displays of wealth. Against this background, Marconi races against incredible odds and relentless skepticism to perfect his invention: the wireless, a prime catalyst for the emergence of the world we know today.

Meanwhile, Crippen, "the kindest of men," nearly commits the perfect crime.

With superb narrative skills, Erik Larson guides these parallel narratives toward a relentlessly suspenseful meeting on the waters of the North Atlantic. Along the way, he tells of a sad and tragic love affair that was described on the front pages of newspapers around the world, a chief inspector who found himself strangely sympathetic to the killer and his lover, and a driven and compelling inventor who transformed the way we communicate. Thunderstruck presents a vibrant portrait of an era of séances, science, and fog, inhabited by inventors, magicians, and Scotland Yard detectives, all presided over by the amiable and fun-loving Edward VII as the world slid inevitably toward the first great war of the twentieth century. Gripping from the first page, and rich with fascinating detail about the time, the people, and the new inventions that connect and divide us, Thunderstruck is splendid narrative history from a master of the form.

An excerpt:

"One night, during a storm, an engineer named W. W. Bradfield was sitting at the Wimereux transmitter, when suddenly the door to the room crashed open. In the portal stood a man disheveled by the storm and apparently experiencing some form of internal

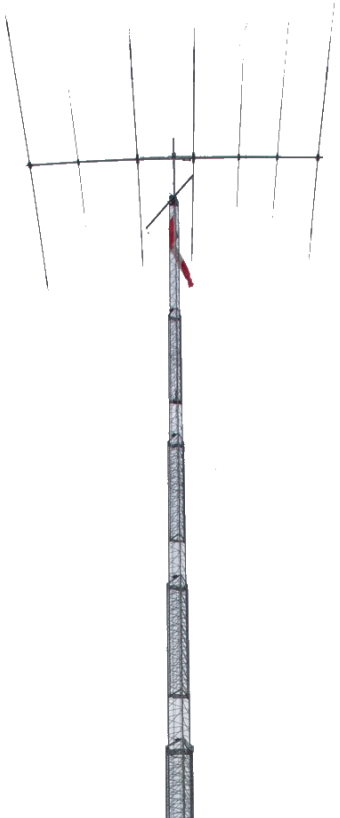
agony. He blamed the transmissions and shouted that they must stop. The revolver in his hand imparted a certain added gravity. Bradfield responded with the calm of a watchmaker. He told the intruder he understood his problem and that his experience was not unusual. He was in luck, however, Bradfield said, for he had "come to the only man alive who could cure him." This would require an "electrical inoculation," after which, Bradfield promised, he "would be immune to electro-magnetic waves for the rest of his life." The man consented. Bradfield instructed him that for his own safety he must first remove from his person anything made of metal, including coins, timepieces, and of course the revolver in his hand. The intruder obliged, at which point Bradfield gave him a potent electrical shock, not so powerful as to kill him, but certainly enough to command his attention. The man left, convinced that he was indeed cured."

Erik Larson is the author of three other national bestsellers: In the Garden of Beasts, The Devil in the White City, and Isaac's Storm, which have collectively sold more than 5.5 million copies. His books have been published in seventeen countries.

Aside from being an interesting 'whodunit', it is also a story with enough technical detail that it will interest those in the Amateur Radio community.



A Pre-Field Day QRP Opportunity?



I just watched this YouTube video:

https://www.youtube.com/watch?v=mxbeu4oLKu8

Basically his club has been having a "QRP Night" the evening before Field Day (Friday). Assuming good weather, I will participate and will likely start around 4 or 5 PM to match the evening start in the east, and go for a few hours. It is nothing formal just a chance to get on the air without pressure before the contest.

QRZ Forum:

http://forums.qrz.com/index.php?threads/qrp-night-it-should-be-a-thing.567077/

If others are interested let me know and I will mention it on the QRZ forum.

Please pass this along to anyone I might have missed or other local clubs that you think might be interested.

~Sheldon VA7XNL

Tech Topics

John Brodie VA7XB

Revisiting An Old Project



The venerable MFJ Model 259 antenna analyzer can be adapted with coils to operate as a dip meter.

Recent talk about how to test traps on a multi-band antenna got me thinking about the venerable "grid dip meter". After a VOM and antenna analyzer, a dip meter is one of the most useful instruments you might think of acquiring for your ham shack, especially if you like to experiment and trouble-shoot.

Of course, the term "grid dip" is obsolete as it refers to the earliest version of the instrument which used vacuum tubes whose grid current dips when its L-C circuit is coupled to an external resonant circuit. The idea is that if you wish to measure the resonant frequency of a tuned circuit, you put the meter near to the circuit under test so the coils are inductively coupled and note the frequency at which the meter shows a dip. Simple! Nowadays, of course, solid state circuits replace the vacuum tube oscillator.



The author's home-made crystal calibrated dip meter, showing crystal in place.

Only problem is that these instruments are not, by nature, very accurate so the exercise can often lead you in the right direction but may not be sufficiently precise for your needs. This was my situation circa 1972 when I was constructing a 5-band single conversion HF receiver as part of my aspiration to have a 100% home brew station (I never actually got there) but I had no way of aligning it. In fact, the receiver appeared to work but I couldn't hear any signals where they were supposed to be. The receiver had a 9 MHz IF and utilized a 9 MHz SSB crystal SSB filter, which was somewhat of a departure from the conventional design in those days. In order to tune the amateur bands, the 5-5.5 MHz signal from the VFO was mixed with a band switched crystal controlled oscillator to create the 9 MHz IF.

Along came a circuit in QST that described a "crystal calibrated solid state dip meter" – just the ticket for me. A crystal is nothing more than a physical manifestation of a resonant circuit as the crystal oscillates at a unique frequency (plus harmonics). This interested me because I had a variety of crystals on hand. I could calibrate with both the crystal's fundamental frequency and several of its harmonics.

I suspected the VFO in my receiver was not tuning exactly 5.0-5.5 MHz as designed. This turned out to be the case, and by calibrating the meter with my supply of crystals to create an accurate calibration curve, my home-made dip meter was sufficiently accurate that I could adjust the L-C circuit and – voila! – I could now bring in the ham bands.

After the receiver, I went on to construct an electronic CW keyer, then a 2-band 20/80 m transmitter using the same fundamental concepts as the receiver but, alas, this last project was never completed. By the mid 1970's it was apparent that tube gear was on the way out, so I abandoned the projects and the parts fill my junk box. Nowadays, calibrating the grid dip meter would be done a different way… just listen for the oscillator signal on your receiver to determine its frequency. But the usefulness of a dip meter has not changed. It will tell you the resonant frequency of an L-C circuit and, if the L value is known, it will tell you what the C value is (or vice versa) by simple formula which relates the 3 variables in the formula below.

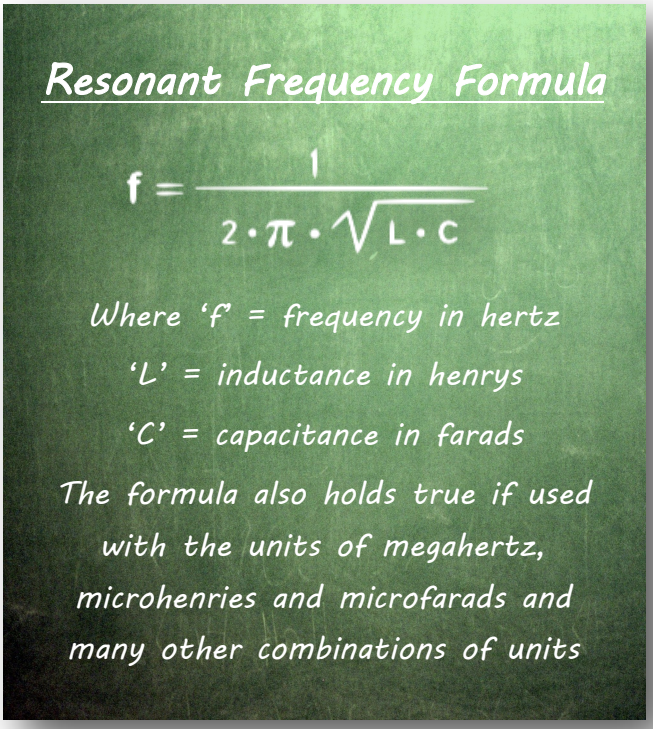
~John VA7XB



The coils to operate the MFJ Model 259 Analyzer as a dip meter



Above, one of many commercial dip meters available on the market.

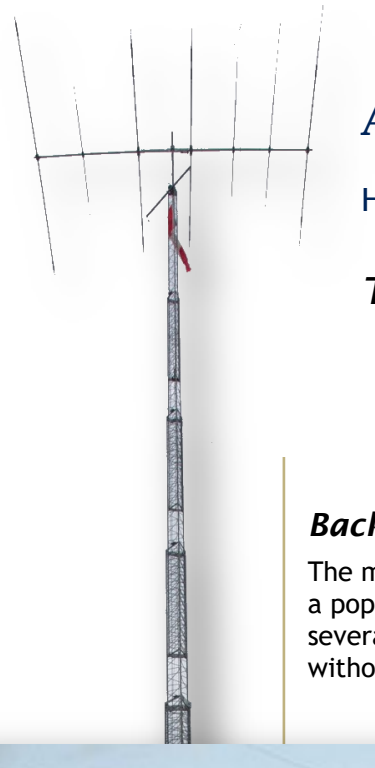




Stolen Property Alert!

Around May 10-15, an MFJ 269 antenna analyzer in a yellow Pelican case was stolen from my garage. ID inscribed on the unit is VA7XB.

Please let John Brodie VA7XB know if you have any information or find this item advertised for sale: va7xb@rac.ca.



Antenna Adventures

Howard Groveman W6HDG

The Fence Fan Dipole

Background

The multiband fan dipole has always been a popular antenna choice for getting on several bands with a single feedline and without the need for an antenna tuner.



A Quick, Easy and Inexpensive Home-brew Multiband Antenna

The height is limited only by the nearest tall tree and the cost of the antenna is minimal. The antenna is also rather stealthy – especially if 16-18 gauge wire can be used in sub 200 watt installations. The antenna basically consists of two to five or more distinct half wave dipoles which are mounted to a common parallel feedpoint so that a singe feedline can be utilized. Some nice designs are easy to find on the Internet or in antenna handbooks. Most designs now suggest (based on Stanford Research Institute data) that the feedpoint be separated by as much as 5.5 inches between dipoles and that the lower frequency (longer) dipoles can be about 4% shorter than the 468/frequency in Mhz would dictate whereas the higher frequency (shorter) dipoles need to be about 4% longer. Many designs also recommend the controversial "ugly balun" choke in the design which is nothing more than 18-21 feet of coax close wound on a 4" or greater non-conductive form at the feedpoint..



The "Ugly Balun" choke type balun using coax windings is great for a single band antenna, but the number of turns determines its effective choke frequency – so it is impossible to cover 80 through 6 meters with one coil of coax. I had heard wonderful reports of the baluns designed by the late

Jerry Sevick W2FMI. These designs were now being made by Mike Lapuzza, KM5QX who runs Clear Signal Products at website www.coaxman.com. Mike was kind enough to make a special version of his 823A balun *(right)* without the eyebolts so that it would fit inside my PVC drainpipe. This fit inside the pipe at the same location where the external coax windings were removed. The balun worked like a charm and I have since received nothing but great audio reports – even after adding an Elecraft KPA500/KAT500 amp/tuner combo to my station. Mike hand makes the baluns, so he is very open to special orders like mine.

There are certain downsides of the traditional fan dipole in that the top wire must often support the entire weight of the antenna as well as the balun. The need to ideally spread out the feedpoints by up to 5.5 inches also makes the feedpoint area rather cumbersome. Complicated spreaders must also be used in order to keep each dipole taut and well separated when there are only 2 end attachment points. There also can be some interaction among the dipoles and some detuning may occur if a dipole is included which is a frequency multiple of 3 from a longer dipole in the system (3rd harmonic). For example a 30 meter, 15 meter and 6 meter ½ wave dipole may not be possible if an 80 meter, 40 meter and 17 meter dipole exists. A possible match may be obtained on 30 meters, 15 meters and 6 meters using the existing longer dipole but testing is required. Finally, it is difficult to trim and tune the antenna, since a single rope or rope-pulley system supports the entire array and it must be completely taken down for wire tuning or repair.

Objective

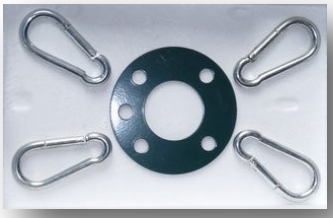
I am just getting back on HF after a few year hiatus and have moved to a neighborhood with some antenna restrictions. My rig is a Yaesu FT-857D and Astron 30 amp power supply. I have no tall trees on the property but do have one large feature on the property – a 45 year old tennis court with 12 foot fencing all around it. Each long side of the fencing is 120 feet total (a nice sounding number to dipole fans).

I decided to try an inexpensive antenna design as a starting point "just to get on the air". I figured that if I lashed a 10 foot section of schedule 40 PVC pipe to a central fence support with hose clamps, I could get an inverted-V up at around 20 feet at the center (not an ideal height for DX, but certainly usable). I then figured that I could use the dipoles themselves as "guys" for the central support if at least two of the dipoles were attached on a short offset support on both sides of the fence. The other dipoles could be "bungeed" directly to the fence mesh to keep them taut.

In researching lightweight support poles, I found an alternative to PVC pipe from John at http://goverticalusa.com. John sells new and used surplus military style fiberglass and aluminum 4 foot mating mast sections. The aluminum and fiberglass poles can be used in combination and fit together perfectly. To get to my goal height of 36 feet, I decided to use 6 stiffer aluminum sections for the lower mast and 3 fiberglass sections for the upper mast. My reason for using fiberglass was so that there were no metal sections at the top to interfere electrically with the dipoles.

John also makes a very nice guy ring *(right)* which can be inserted at any joint in the sections. I placed the guy ring at 24 feet so that I could guy the mast at that point using some Dacron rope. I fashioned two additional ¾ inch PVC outriggers to the fence to support the ropes from this guy ring in a 360 degree fashion (see final antenna picture). Remember, my lowest 12 feet of mast was solidly supported by hose clamps along the 12 foot high tennis fence. At

I decided to try an inexpensive antenna design as a starting point "just to get on the air".













Materials used in construction

the top (36 feet), the antenna would be "guyed" in the same way it had always been, by attaching the dipoles to the fence top with tarp style bungee straps (using some PVC outrigger poles at the fence top to keep the antenna balanced at the vertical). With the increased height, I now needed to add some Dacron ropes to some of the dipoles to fan them out properly along the fence.

The result has been worth the effort. The only downside of the increased height is that the entire mast would need to be lowered for any work to be done on the antenna's individual dipoles. You can't tilt over 36 feet of military poles without damaging them, so the antenna must come down the same way it went up – by removing (adding) one section at a time from the bottom as you slide the pole down (up) through the loosened hose clamps. Not very elegant but doable with a couple of people.

The advantages of my Fence Fan Dipole (FFD) design is that just about any sturdy fence that spans the linear distance of the lowest band can be used. The center feedpoint and balun can be made from a single two foot section of 4" drainpipe with end caps for weather resistance. This could be attached and supported atop a central PVC support pipe with appropriate threaded plumbing adapter and an electrical metal threaded nut available at most hardware stores. See construction images below. Each dipole is separately lashed to the fence with a bungee-like tarp strap so individual band tuning does not require entire antenna takedown. Dipoles can be easy attached and changed at the retention/relief posts along the drainpipe for testing, experimenting and possible future repairs. Finally, excellent spreader distances between dipoles at each endpoint can be achieved.

Construction

RG-8X coax and PL-259 connectors with adapters were the only ham radio specific parts.

The remaining parts were all obtained during a couple of trips the nearest Home Depot *(see margin photos)*:

1. 18 gauge bare stranded copper "ground" wire is about $17 for 250 feet and worked extremely well. The 250 feet was just a few feet short for all dipoles so I made my 17 meter dipole from heavier bare copper stranded antenna wire I had on hand. If any of the copper is tarnished, it can be quickly rejuvenated by soaking in a few of ounces of vinegar with a half teaspoon of salt added. This allows the copper to be solder-ready in the necessary spots.
2. Two foot section of 4" ABS drain pipe with 2 end caps.
3. Ten foot section of 1 inch schedule 40 PVC with threaded PVC adapter and a metal retention nut sold in the electrical section for threaded pipe.
4. Three hose clamps to attach the PVC to a vertical member of the fence post.
5. Copper clad plumbing strapping, copper electrical lugs with setscrews (Burndy KA4CBAG2R), Ten ¼ inch x 1.5 inch eye bolts, two solder lugs for



coax attachment, ten ¼ inch lock washers and a total of twenty ¼ inch nuts (ten of which are included with the eye bolts).

6. Four short 18 inch pieces of PVC to be use as fence "guy" standoffs along with four U-Bolts for attachment *(see close-up image on page 20)*.
7. Ten tarp straps (bungee cords).
8. 10 Plexiglas rectangles prepared from a single 12"x12" sheet of 1/8" Plexiglas. Each rectangle about 3 inches by 1.5 inches with holes drilled on each long end.

Construction is quite straightforward if you study the images. I separated the 80 and 40 meter dipole eyebolts by the full 5.5 inches. I compromised and separated the 40 and 20 meter dipoles by 4.5 inches, 20 and 17 meter dipoles by 3.5 inches and the 17 and 10 meter dipoles by 3 inches. Each of two copper clad straps run the length of eyebolts along the inside of the ABS pipe. The coax lugs are attached at the eyebolts closest to the "ugly balun". Lock washers are used between the interior nut and the copper strapping. The balun itself is about 16 turns of RG-8X (21 feet) with epoxy used to seal the two inlets. The RG-8X then runs down the inside of the PVC support pipe. I used a barrel SO-239 at the bottom of the support pipe for convenience. I painted the coax, the ABS pipe and PVC all brown to keep things stealth.

A note about using two of the dipoles as "guys" to keep the flimsy PVC support pipe upright: If I had bungeed all dipoles to the fence mesh itself, I would not have had support in the "Y" plane to keep the PVC support pipe upright. I could have used two opposing rope guys for this purpose, but didn't want to have any ground mounted supports. So I fashioned 18 inch fence top extenders by grinding a corresponding arc in an end of a piece of PVC and used a U-Bolt through the PVC to create a sturdy standoff from the fence. Good "Y" plane support can be achieved by bungee-ing two of the shorter dipoles on each side of the fence with these extenders. This has kept the central PVC pipe quite vertical with resistance to winds we have seen to date *(photo lower right)*.

The completed antenna is so stealth, it is quite hard to photograph. Hopefully this image with give you a good idea of the appearance of the support and at least of 3 of the 5 dipoles.

Dipole lengths, after adjusting some of the dipoles with the help of an MFJ-259 antenna analyzer were approximately:

80 meters : 61 feet each side including the loop between setscrew and eyebolt

40 meters: 32.8 feet each side including the loop between setscrew and eyebolt

20 meters: 17 feet each side including the loop between setscrew and eyebolt

17 meters: 13.6 feet each side including the loop between setscrew and eyebolt

10 meters: 8.6 feet each side including the loop between setscrew and eyebolt

Results

The FFD has obvious downsides – non-portability, height compromises and possible interaction with the fence if it is metal. But initial testing has been quite good. During an hour of operating the IARU HF championship July 14-15, 2012, I worked 6 countries on 4 bands including Aruba, South Cook Island, Japan, Argentina, Canada and Mexico.



Materials used in construction



'Y' Plane support

…dipoles and inverted-V's can make good antennas

The antenna has acceptable SWR on 80, 40, 20, 17, 10 and 6 meters and contacts were made on all bands without an antenna tuner. 15 meters is usable.

SWR results were as follows:

- 3.8 Mhz 1.9 (SWR was 2.5 at 3.70, 2.5 at 3.9 and 3.8 at 4.0)
- 7.2 Mhz 1.3 (SWR was under 2.0 across entire band except 2.6 at 7.00)
- 14.13 Mhz – 1.0 (SWR was under 1.5 across entire band)
- 18.14 Mhz – 1.0 and same across entire band
- 21.3 Mhz – 2.9 and same across entire band
- 28.5 Mhz – 1.2 (SWR was under 2.0 across entire band except 2.2 at 29.7)
- 52 Mhz – 1.4 (SWR was under 1.8 across entire 4 Mhz of the band)

I may add a tuner to get a better match on 15 meters and more bandwidth on 80 meters. It is unclear if a dedicated 15 meter dipole would have worked fine or if there would have been detuning - I haven't tried it.

I have no illusions about DX worthiness of this antenna. But dipoles and inverted-V's can make good antennas – especially on the lower frequencies where multi-element antennas are not practical. The multiband variety of the dipole such as that described here, when well tuned, should not suffer appreciably in performance over a monoband dipole at similar height. The advantages of a single feedline cannot be overemphasized.

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~ Howard Groveman W6HDG
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The completed antenna

RAC News

Countdown to the World Radiocommunication Conference 2019

Bryan Rawlings, VE3QN, RAC Special Advisor, is in Geneva, Switzerland attending Preparatory Meetings for the World Radiocommunication Conference (WRC).
The current meetings are the third of a series of meetings which will continue until just before WRC-19 now scheduled to be held in Geneva from October 28 to November 22, 2019.

Preparatory Meetings are almost always two weeks in duration and are held at the International Telecommunication Union (ITU) headquarters in Geneva. This time Bryan is attending as a member of the Canadian Delegation and also as an Expert Consultant for the International Amateur Radio Union (IARU).

Preparatory Meetings primarily prepare documents on the agenda items identified for the upcoming WRC. They are in turn preceded by meetings and the submission of documents from the participating administrations, for example, Canada through its authorized government agency, the Department of Innovation, Science and Economic Development (ISED; formerly Industry Canada). Canada is represented by ISED. The RAC representative is made a member of the delegation by invitation and Bryan's role is to advise on Amateur issues.

The principal Amateur Radio issue is an international authorization of the 50 to 54 MHz band in ITU Region 1 (Europe, Africa and the Middle East) – not a critical issue for Canadian Amateurs.

Also under consideration are:

1. an expansion of Radio Local Area Networks (RLANs) into the 5 GHz band. Amateurs have a secondary allocation here in 5650 to 5925 MHz which we already share with the Primary Users and with ISM (Wi-Fi, etc.).
2. proposals to study frequencies for wireless power transfer, e.g., charging cellphones and bigger devices.



 Depending upon the frequencies planned and the technical characteristics there may be a significant potential for interference to Amateurs.
3. studying the possible frequency range for International Mobile Telephony (IMT) in a range between 24.25 and 81.5 GHz. Radio Amateurs will be carefully watching our Primary allocation in 47 to 47.2 GHz.

As was the case during the WRC-15 conference, Bryan will be tweeting comments on Amateur Radio issues from the meeting using the hashtag #RACatITU. You can also follow him via @ractweets.

Bryan will also be including a report in the next issue of The Canadian Amateur magazine at the conclusion of the meetings.

For more information visit the RAC website at:

http://wp.rac.ca/wrc-preparatory-meetings-may2017/

~ Radio Amateurs of Canada



Adam's Tech Topics

Adam Foley N1RKW

All About Transistors

The two most common types of transistors are NPN and PNP



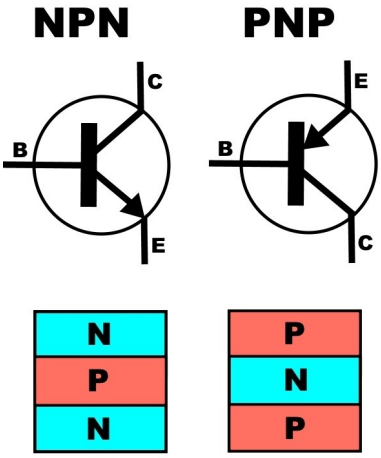
Although Adam has 'retired' from his monthly column, he has allowed us to publish some of his earlier installments.

This month I have arrived at the one subject that I worry about the most: Transistors. I dread writing about them because I don't really have a good understanding of them. With that in mind, this month's column is going to involve a lot of learning – on my part and hopefully yours as well if I can pass what I learn on in a cogent manner.

To be clear, I understand the basics. I know that transistors work somewhat like switches or relays, I know that there are 2 basic types, NPN and PNP, along with a rather large number of other types such as SCRs and FETs. I even know what some of these acronyms mean! What I don't understand are the intricacies of transistors. Why are there thousands of different types of transistors when they all do roughly the same thing? Why do some types handle high frequencies (such as the output transistors in our radios) and others that can barely handle audio frequencies? What in the world does it mean to bias an amplifier transistor?

These are things I intend to find out, and I'll take you along for the ride. Maybe we can both learn something this month.

The two most common types of transistors are NPN and PNP. When looking at a circuit diagram, it's easy to mix up the two types. Here's how I was taught to figure out which is which: In a circuit diagram, the arrow shown in the NPN transistor is "Not Pointing iN". See what I mean?



So we know that if the arrow is pointing out, or "Not Pointing iN", we are looking at an NPN transistor. If the arrow points inward, we know that it is a PNP transistor instead.

This diagram also shows us how the different layers of these two types of transistors are put together. Most transistors are made of silicon (not to be confused with silicone rubber), a glass-like element with some very special properties. Just like the silicon diode that we looked at several months ago, a transistor is made up of layers of silicon that are doped with different chemicals or elements such as phosphorus, arsenic, or boron. These different chemicals alter the electrical characteristics of the silicon in such a way that it either

becomes N-type and wants to give up electrons, or P-type and wants to take in electrons. Unlike the diode, however, the transistor is typically made up of three layers, and the third layer is what makes it so useful. The reason is simple: when you apply a small amount of electricity to the middle layer of the transistor, called the “base”, it allows a much larger amount of electricity to flow between the outer two layers, called the “emitter” and the “collector”. In this way a small signal, such as the ones coming in to your radio from your antenna, can be used to control the output of a transistor, resulting in a much larger signal that is identical to the original in all respects except amplitude. This is called amplification, because the output signal or voltage is potentially much greater than the input signal. In this way, a transistor can be used to make music louder, radio signals bigger, and power supplies more powerful.

One way to visualize the way a transistor works is to think about a water valve. Picture yourself standing at the base of a water tower with the main valve in your hands. You can, by making small changes to that valve, alter the very large flow of water coming from the tower and out to the town below. You could even operate that valve rapidly in such a way that the water coming out of the water tower would be coming out in pulses. In this way you can get an idea of how the transistor works, and also annoy the local townsfolk. The transistor is the electrical equivalent to that water valve, controlled by small amounts of electricity instead of small amounts of hand movement. Typically there is electricity available on one side of the transistor, at the emitter, which can be adjusted or “pulsed” by a relatively small amount of electricity applied to the base, allowing large “pulses” to come out of the collector side of the transistor (I know this sounds backwards, but that is the direction that the electrons flow). The transistor is much faster than your hand, of course, which is why a transistor can control the flow in such a way that the much more powerful output has the same “pulses” or frequency as the tiny signal controlling it.

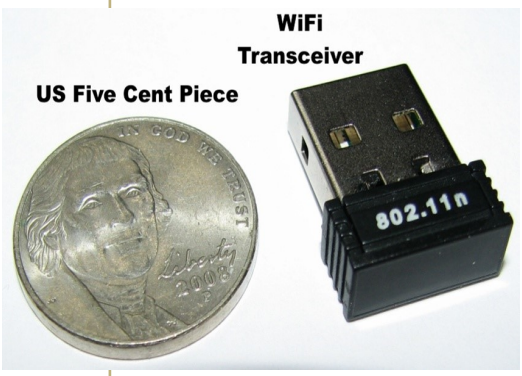
Or to put it another way, a tiny signal, such as the signal from a microphone, applied to the base of a properly wired transistor will be amplified many times, which will allow it to power a speaker. The actual circuit to make this work is more complex than this, but this should give you an idea of what is happening when you pick up a public address microphone and hear your voice come out of the loudspeaker, scaring the people sitting in the first two rows.



Radio waves are amplified in much the same way: a small radio signal of only a few microvolts comes in from the antenna and is amplified many times by at least one and often dozens of transistors (along with demodulation and quite a bit of filtering) before going out to the radio's speaker so you can hear the words, “Your signal is 59. Please repeat your callsign, I can barely hear you.”

In a computer, transistors are mostly used for their ability to be used as switches. Modern desktop computers can contain literally billions of transistors! Most of these are found inside integrated circuits, or ICs. We often think of “nanotechnology” as being futuristic, but the phone in your hand probably has transistors in it that are only 10 or 15 nanometers in size, literally only a few hundred atoms in length! If that isn't nanotechnology, nothing is. By way of comparison, the very first transistor was roughly the size of a golf ball. Even at that size, it was a huge leap forward over the old thermionic valve, or vacuum tube, that was much less reliable, much slower, and much less efficient. As hams we know that tubes still have their place in some types of electronics, such as high-power radio amplifiers and professional audio equipment, but in most devices transistors work much better, take up less space, and use less power. In fact, the handheld radio wasn't even a possibility until transistors

became available. Portable radios before then typically could and did fill entire backpacks. Now we have some WiFi transceivers that are as small as a nickel!



Now that we've established the basic operation of a basic transistor, let's try to answer some of the not-so-basic questions I posed at the beginning of this article:

What is a FET?

A FET is a Field Effect Transistor. This is a type of transistor that uses an electric field to control conductivity between the input and output terminals of the device. Some of the main advantages of the FET are good isolation between the control and the input/output of the FET and very little current is needed to make the device conduct.

What is an SCR? An SCR is a Silicon Controlled Rectifier, also known as a Thyristor. They are devices that, once they begin to conduct current, will continue to do so as long as the electricity going through them continues to go in the same direction. In other words, they act something like a switch that will stay turned on until the power either stops flowing or starts flowing the other way.

What does it mean to bias an amplifier? Amplifier biasing is something that I only have a rudimentary understanding of, but I will try my best to explain it. Every transistor has a minimum voltage at which it will begin to conduct electricity. If your signal has portions that are less than that minimum voltage, the transistor will not conduct during those portions of the signal, clipping off portions of the signal and leaving you with a badly distorted waveform (in other words, it will sound terrible). The solution is to offset the voltage of the signal so that the entire waveform of the signal is within the range in which the transistor will conduct. This is called biasing, and can be accomplished through a very simple circuit that is a kind of voltage divider, and some not-so-simple math. I will not attempt to differentiate between different types, or classes, of amplifiers here. That is a subject for an article all by itself.

As for why there are so darn many different transistors and why they do what they do... I just don't know, and I won't pretend to. I will say this: there are many different chemicals used to dope the silicon in transistors. There are also many different ways to build transistors, and many different ways of packaging them. Combine all of this and you get an extraordinary number of combinations. Millions, actually. That being said, there are some that are more common than others. The 2N2222, 2N3904, and 2N3906 are all very, very common types of transistors, and can be found in electronic devices, projects, and junk boxes the world over. These are often “go to” items for the electronic hobbyist, and I have used a number of these in my own projects over the years. For example, just last month I repaired a 2 meter transceiver by replacing a blown PNP transistor with a 2N3906 from my collection.

The basic bi-junction transistor is simple, robust, and efficient. It can be made to stand alone as a single device, packed into an IC along with millions just like it, put into a clear housing to be used as a photo-detector, or used in a myriad of other fascinating ways. Technology as we know it simply could not exist without the humble transistor. The next time you are seriously annoyed by the incessant ringing of your cell phone, remember that you can thank the folks at Bell Labs for both the concept of the telephone and the transistors that make them work!

I hope this article proves helpful to you. I am always open to comments, critiques, corrections, and suggestions for future articles. Also, thank you for the kind responses I have received about my previous articles. I can be reached at n1rkw@hotmail.com, or on any of the CNHARC analog repeaters. 73.

~ Adam Foley N1RKW
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Guest Columnist Adam Foley N1RKW is a member of the Central New Hampshire Amateur Radio Club and contributes a monthly column “Adam’s Junk Box” to their newsletter, also called The Communicator.

Adam also has a YouTube Channel



Club News

What's 'Ham-pening' In And Outside Surrey?

Surrey Amateur Radio Club

Another Successful SARC Fox Hunt

The annual SARC "Fox Hunt" was held on May 20th in Crescent Park in South Surrey. SARC members and Hams from Burnaby and North Shore clubs supported the event; 31 Hams and a few spouses participated. The event is certainly growing in popularity as these attendance numbers will attest. It was a brilliantly sunny dry day and with great enthusiasm as the groups were dispatched in 5 minute intervals . Much fun was had by all.

There were five 2 watt VHF 2m transmitters (foxes) and five 80m foxes hidden throughout the park, and participants were allocated two and a half hours to find them. Entrants were grouped into either novice or "Expert" groups. This allowed for four groups, a novice and expert 2m, and a novice and expert 80m. There was no one registered for the expert 2m group

The second half of the event was the informal BBQ, providing an opportunity to engage in adventure stories, exchange lessons learned and enjoy warm camaraderie and recreation over a burger and hot dog.



Recognition and greatest of thanks goes to Les Tocko VA7OM , and Jan Voslenik VA7VJ who handled all the set up and the technical aspects of the "foxes". Much appreciation to Brenda (XYL of Anton VE7SSD) for putting on the BBQ. Special mention is made of Amel VA7KBA of BC Radio sport, unable to attend through a conflict in schedule. His support throughout the year is acknowledged.





More photos at URL:

tinyurl.com/FoxHunt17



Above: Grill Mistress Brenda James

Below: Enjoying a BBQ lunch on a gorgeous day.

Far right top to bottom: Jan VA7VJ, Paula & Peter VE7PSP, and Karen & Steve VA7KD receive their prizes from Anton VE7SSD.

The results:

Advanced 80m group 1st place, Jan Voslenik VA7VJ, 5 foxes in 55 minutes.

2nd place, Henry VE7HRY and Jeanne VA7QD, 5 foxes 80 minutes.

3rd place,

Novice 80m group 1st place, Paula and Peter Suckling VE7PSP, 5 foxes 79 minutes;

2nd place Mary VE7EIE, 5 foxes in 80 minutes; and

3rd place Lawrence VA7EDU, 5 foxes in 87 minutes.

Novice 2m group 1st place Steve VE7FM and Karen Draper VA7KD, 4 foxes in 135 minutes.

An informal “prize” ceremony, bragging rights, and the crystal fox trophy, was awarded to the winner Jan VA7VJ, and the stuffed musical bunny was awarded to Steve and Karen Draper.

Mark your calendars, approximately same time next year on May 19, 2018, and we look forward to another annual SARC FoxHunt

~ Anton VE7SSD,
SARC Fox-Hunt Coordinator









North Shore Amateur Radio Club

NSARC Fox Hunt and Picnic

Another great success: The 2nd annual NSARC fox hunt was a great success at Princess Park, thanks to Sally's organization. President Bernie VE7BR welcomed the twenty-four people attending, including several guests and a couple of non-amateurs.

Twenty people participated in the hunt. BCRADIOSPORT provided loaner receivers, training and assistance with the course layout (Amel VA7KBA and Sally VA7SMF).

The weather, while not hot, was pleasant and sunny.



The Fox Hunters…



And, the picnic that followed…
Carole VA7QCE and Sally VA7SMF

VECTOR—Vancouver

EP Week: VECTOR At Science World

VECTOR was one of the exhibitors at the City of Vancouver's Emergency Preparedness Week 2017 (EP Week) launch "In It Together" on Sunday May 7 at Telus World of Science at the east end of False Creek of Vancouver.

Radio Amateurs joined other City of Vancouver programs including Emergency Social Services (ESS), Neighborhood Emergency Assistance Team (NEAT) and staff from the Office of Emergency Management. Vancouver Fire & Rescue Services had apparatus on display and fire extinguishing demonstrations.

VECTOR's indoor exhibit featured a self-contained transportable radio station Grab & Go Radio Kit; this 2M / 1.25M / 70cm radio kit incorporates packet data capabilities and redundant power capability. Members were on hand to provide demonstrations, allow the public to make radio contacts and make out commemorative "QSL" cards (proof of radio contact).

Their outdoor exhibit was the Community Emergency Response Vehicle, a converted 1976 GM "New Look" transit bus that once roamed Vancouver's streets collecting fares. Inside are five operating positions and a plethora of communications and computer equipment to support a mobile command centre. As you can imagine the converted bus is popular with kids and with those who remember riding this particular vintage alike.

Radio-Active

Robert Fishwick VA7FMR

Profiles of SARC Members

Robert was born on the 13th of June 1937 at home, in the Town of Swinton in Lancashire, a suburb of the city of Salford in the UK. His parents moved to Salford proper when he was 2.5 years old. The second world war was raging by the time he was 3.5 years old and by the wars end he was playing, like most wartime boys, in the bombed out homes that lay in rubble by the hundreds. Finding un-exploded incendiary bombs was a great thrill for them since it would bring the Army bomb disposal guys with all of the excitement of an explosion to get rid of the nasty things. By the time he was 17.5 Robert had graduated from Openshaw Technical College with a Union Of Lancashire and Cheshire Institutes Diploma in Electronics.



At this time, conscription into the armed services was still the norm and it would be his turn on Robert's 18th Birthday. Since this call up was a crap shoot as to which service you would end up in and indeed what your job would be, he looked at the regular armed service brochures and found that if you volunteered and signed on for at least 4 years, you could choose the service in which you would serve and the job you would actually be doing. Since he did not fancy carrying a rifle or driving a tank or swabbing the deck of a destroyer, he signed up for a four year stint in the Royal Air Force, putting his electronics diploma to good use. After basic training he was sent down south to Western Supermare to the electronics training station, RAF Locking. After graduating the fairly extensive electronics courses they were marched out to the parade ground to receive their postings. To his amazement, he was to board a troop ship sailing to Singapore. At the Queens expense they experienced a far from luxurious cruise via the Mediterranean, the Suez Canal, the Red Sea, Aden, Ceylon and onward through the Indian Ocean to Singapore. He arrived at RAF Changi only to find that he was "Surplus to Requirements". Robert was told to report to station Headquarters at oh eight hundred every morning until a posting came up. He spent two weeks lying on the beach and swimming in the tropical waters of Singapore but on the 15th day he was told that he had been seconded to The 94th Field Regiment stationed at RAF Butterworth in Northern Malaya. The word seconded is a posh way of saying that you have been transferred to

another service, like the Army or some other horrible place that you never signed up for. Being a greenhorn to weaponry, he was immediately sent off to Camp Hobart, a Gurkha Jungle Warfare Training Camp where he learned how to shoot every weapon imaginable, he was in Teenage Heaven. He fired most weapons from a nine millimeter Owen sub-machine gun on up in size to a three inch mortar. Robert says that the three inch mortar had to be his favorite. It was not just the discipline of the mortar firing team that he loved, it was the knowledge that when he dropped that three inch shell down the tube, someone a few hundred yards away was in for a very big surprise. The 94th were the ground troops who defended the station in response to a ground attack. The UK was, at that time, waging jungle warfare against Communist terrorists supported by China through Siam in the north. After several devastating attacks on Army Camps by the terrorists, FEAF Command ordered all mobile troops into the Jungle to wipe out the terrorists. So, at the tender age of 18 and some few months, he ended up at a jungle base camp near Slim River, a small town on the Northern train line. He ended up spending 2 to 3 weeks in the jungle, with a week off for fresh food and rest, carrying a very heavy back pack, several grenades, a pound of C4 explosives, a jungle carbine rifle, 303 caliber, and he thought that he had signed up for the RAF, thank you very much. All went well and we were very successful.

After seven or Eight months of hauling his little tushie through the Jungle, they were returned to Butterworth and returned to normal duties, letting some other lucky fellows have a turn in the jungle.

Robert learned to speak Malay during his 2.5 year stay in Malaya, he says it was easier than having his interpreter talk over my shoulder all the time when addressing the locally enlisted troops. Robert returned to the UK in 1958 and served his last year back in the RAF, at last, at RAF Waddington in Lincolnshire.

When de-mobbed, he worked at a local radio store fixing televisions. In the fall of 1959 he joined NCR working in the Accounting and Computer division as a technician. He had found his dream job, as he loved fixing computers. In those early days they were working with first generation vacuum tube computers with huge computer rooms and 10 ton air conditioners trying to keep the room cool. He was lucky to work through second, third and eventually fourth generation computers, watching them get smaller and smaller. He worked on them all and did troubleshooting to component level. It is all board-swap technology now, the end of the true computer technologist. Robert was promoted to General Manager, Southern Counties, to be working from Brighton on the South Coast. All technical personnel of NCR, south of a line drawn east west just south of London were his responsibility. He had not yet moved to Brighton but had already visited the Branches in Bournemouth, Portsmouth and Plymouth when his mother wrote informing him that she had cancer, was dying and wanted both of her sons with her in Canada. Robert's brother had married a Canadian girl he had met in London and had moved to Vancouver. Mom and dad sold their business at retirement age and had gone out to Canada to join his brother. His mother was extremely persuasive so, reluctantly, Robert made the arrangements to move to Canada as soon as he could. Mom had minor surgery to remove a very small cancerous growth in her large intestine and lived for another 28 years… go figure.

Whilst still in the UK during the cold war years with Russia breathing down everyone's necks he decided to learn Russian so that he could greet the Russian troops in their own lingo. He also learned Spanish just in case they got more annoyed at the UK for occupying Gibraltar. East Germany was rearing it's head as well so he learned a bit of German. He was well prepared for invasion from any direction but since the UK shook it's fist at all comers, like Algebra, he has not had the opportunity to use them, and they have gone the way of the Dodo never to be heard of again.

When at his niece's house last year, babysitting both dogs and house, he strung up an HF antenna in the back garden and had a feeling of déjà-vu looking back at his time in the jungle stringing up an HF antenna in the trees so that they could talk to FEAF Command. Sixty odd years and he has come full circle.

Living in a location with limited options for HF antennas, Robert has experimented with a number of arrangements and currently uses a screwdriver. He is active in rag-chewing and contesting in both phone and digital modes. His next challenge may be CW and he is currently exploring CW translation software—any experiences or suggestions welcome.

Robert has become an active SARC member and can be found at the Saturday SARC coffee meetings. He also participates in club contesting, serves on the OTC Committee and is our Net Manager.

SARC

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June 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
For details on all SARC events, go to ve7sar.net For details on all SEPARS events, go to separ.shutterfly.com/calendar				1 1930 SEPAR Simplex Check-in	2	3 0900 Klub Koffee Klatch: Kalmar Family Restaurant, King George Blvd & 81st Ave.
4	5	6 **1930 SEPAR Net** **2000 SARC Net**	7	8 1930 SEPAR Simplex Check-in	9	10 0900 Klub Koffee Klatch: Kalmar Family Restaurant
11	12	13 **1930 SEPAR Net** **2000 SARC Net**	14 **1900 SARC Annual General Meeting**	15 1930 SEPAR Simplex Check-in	16	17 0900 Klub Koffee Klatch: Kalmar Family Restaurant
18 **Father's Day**	19	20 **1930 SEPAR Net** **2000 SARC Net**	21 **SARC Exec Meeting**	22 1930 SEPAR Simplex Check-in	23 11am Field Day Setup	24 0900 Klub Koffee Klatch: Kalmar Family Restaurant Field Day
25 Field Day	26	27 **1930 SEPAR Net** **2000 SARC Net**	28	29	30	

Contest Details: http://hornucopia.com/contestcal/contestcal.html

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QRT

John Schouten VE7TI

The Busy Month Ahead

So its June already and time once again for two major events… our Annual General Meeting (AGM) and Field Day.

The AGM is required under the regulations for registered societies in British Columbia. We meet once a year to review the past year's accomplishments, plan for the following year, review reports from committees and finances. We also elect one-half of our Directors. Under by-law amendments passed several years ago, we elect a total of eight Directors, four in each alternating year. To avoid the complications of who is running for what position, after the new Board meets, the Directors decide who the Officers of the Society will be. Officers consist of the President, Vice-President, Secretary and Treasurer. Your current Board of Directors are always on the lookout for new Board members. Any organization benefits from new 'blood' to inject fresh ideas into the organization. Please consider a position on the Board or one of the committees.

There will also be several proposed amendments to our Constitution and By-laws tabled for a vote. These have been published in a previous issue of The Communicator and may be viewed again on page 4 of the attached AGM supplement to the newsletter.

The other major occurrence is of course Field Day, the ARRL sponsored event held annually on the last full weekend in June, which makes it on the 24 and 25th this year.

Field Day is a multi-faceted event. Part emergency preparedness training, part contest and part social event. We have done very well in the contest portion in the past few years. We have placed third, second and first in our category in various years. Last year we removed the focus on the contest to permit less experienced operators an opportunity to make HF contacts and thus add to our score. A number of our members did so and feedback was very positive. We also do well for the emergency preparedness component, having setup, run and disassembled our stations and all the peripherals like porta-potties, cooking facilities, and shelter within the allotted exercise period.

What we haven't been as good in… surprisingly, is the social aspect. Sure, we have fun, and last year the ladies did a spectacular job of feeding us, but we missed seeing many of our members on-site. Long range weather predictions for Field Day weekend look promising. Please join us to watch or participate. We'd love to see you there!

73

~ John VE7TI
Communicator Editor





It's June Already!

Wow! We are once again wrapping up a successful season of Amateur Radio meetings and events in Surrey. It seems that September was not that long ago despite snow, ice and more rain than we have had in years. And to make matters worse, propagation wasn't that great either.

Our next meeting on Wednesday, June 14th will be our Annual General Meeting. Please attend for this wrap-up before summer and let us know what your wishes are for the year ahead. Please remember to renew your membership either beforehand or at the meeting.

If we don't see you on the 14th, have a great summer!

SARC hosts an Amateur Radio net each Tuesday evening at 8 PM. Please tune in to the VE7RSC repeater at 147.360 MHz (+600 KHz) Tone=110.9, also accessible on IRLP node 1736 and Echolink node 496228.

On UHF we operate a repeater on 443.775MHz (+5Mhz) Tone=110.9 or IRLP Node 1737.

	SARC Net 20:00 Hrs
1st Tuesday **Standby**	Drew VA7DRW Vacant
2nd Tuesday **Standby**	Jinty VA7JMR Sheldon VA7XNL
3rd Tuesday **Standby**	John VE7TI Rob VE7CZV
4th Tuesday **Standby**	Kapila VE7KGK John VA7XB
5th Tuesday **Standby**	Robert VA7FMR Vacant
Want a turn at Net Control? Contact the SARC Net Manager	

Down The Log…

SARC Monthly Meetings

2nd Wed. (Sept-Jun)
1900 hr at the PREOC
Emergency Mgmt BC
14292 Green Timbers
Way, Surrey, BC

Weekly Club Breakfast

Saturday at 0900 hr
Kalmar Family
Restaurant 8076 King
George Blvd.
Surrey

SARC Net

Tuesday at 2000 hr local
on 147.360 MHz (+)
Tone=110.9

SEPARS Net

Tuesday at 1915 hr local
on 147.360 MHz (+)
Tone=110.9

VE7RSC Repeaters

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Tone= 110.9Hz
IRLP node 1736
Echolink node 496228

1.2m: 223.960 Mhz -1.6
Tone=110.9

70cm: 443.775MHz+
Tone= 110.9Hz
IRLP node 1737

We Have A SARC Patch!

These are suitable for sewing on a jacket, cap or your jammies, so you can proudly display your support for the club.

The price is $4 each or three for $10 and they can be picked up at a meeting or the weekly Koffee Klatch.

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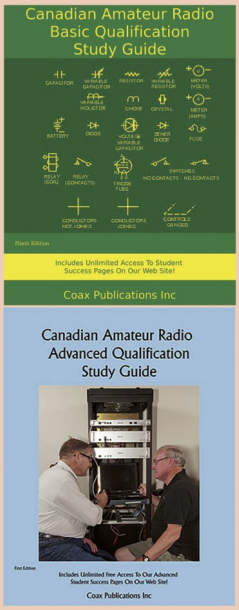
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Surrey Amateur Radio Club

NOTICE OF ANNUAL GENERAL MEETING OF

SURREY AMATEUR RADIO CLUB

JUNE 14, 2017 AT 7:00 PM
EMERGENCY MANAGEMENT BC OFFICES
14292 Green Timbers Way, Surrey, BC

AGENDA

1. Welcome, call to order and confirmation of quorum
2. Approval of agenda
3. Approval of 2016 AGM minutes
4. Presentation and approval of Annual Financial Statements
5. Announcements
6. Committee reports
7. Other/new business
8. Election of Directors
9. Adjournment

CALL FOR NOMINATIONS

Members elect up to 8 Directors, each serving a 2-year term. Directors in caucus appoint the President, Vice President, Secretary and Treasurer.

Directors whose 1- or 2-year term expires are:

- John Schouten VE7TI
- Scott Hawrelak VE7HA
- Mike Plant VE7AT
- Anton James VE7SSD

Directors continuing for the second year of their 2-year term are:

- Stan Williams VA7NF
- Jeremy Morse VE7TMY
- Bill Gipps VE7XS
- Sheldon Ward VA7XNL

A CALL FOR NOMINATIONS

Agreeing to stand for nomination:

John Brodie VA7XB

John Schouten VE7TI

Scott Hawrelak VE7HA

Robert Fishwick VA7FMR

Further nominations will be taken from the floor.

Nominations are currently being sought and will also be taken from the floor.

Only members in good standing may vote at the AGM. This requires that dues be paid for the 2017/2018 fiscal year prior to, or at, the AGM.

Your 2016—2017 Executive

Officers:

President: Stan Williams VA7NF (SEPAR Liaison)

Vice-President: Anton James VE7SSD

Secretary: Jeremy Morse VE7TMY

Treasurer: Scott Hawrelak VE7HA

Directors:

John Schouten VE7TI (Newsletter Editor)

Bill Gipps VE7XS

Sheldon Ward VA7XNL

Mike Plant VE7AT

Minutes Of The 2016 Annual General Meeting

The 2015/2016 Annual General Meeting of the Surrey Amateur Radio Club (held at the Central Training Facility on 64th Ave, Surrey) was called to order at 7:12 pm on June 8, 2016 by President, Stan Williams VA7NF. 31 members were in attendance.

Welcome

Stan welcomed the group to the annual general meeting and confirmed that a quorum of members was in attendance.

Agenda: A motion to approve the agenda was made, seconded and carried.

2015 AGM minutes: A motion to approve the 2015 AGM minutes was made, seconded and carried.

Annual Financial Statements

Scott Hawrelak VE7HA presented the Audited financial statements including: Income Statement, Balance Sheet and General Ledger. Scott responded to several questions from members regarding the financial statement. Scott informed the group that purchase of MS Excel may be needed before September as the auditor had some issues opening the documents with the Open Office application. He reminded everyone that financial statements are always available for review at each meeting. Scott's motion to approve the financial statements was seconded by Al Peterson VA7ALZ, and the motion carried.

Bylaw Amendments

Stan Williams presented proposed bylaw changes to the membership, as previously outlined in the Communicator:

After discussion, a motion to accept the proposed changes was made by Geoff Higginson VA7HIG, seconded by Jay Melvin VE7KC and the motion carried.

Announcements

New member, Bruce Elrick VA7CBE, thanked those who prepared and taught the basic ham class. Also attending was another new member Konstantin Kropivny VA7FFT who passed his exam last August and was attending for the first time.

Currently Reads	Proposed Amendment	Add
5e. Meetings of the Executive shall be at the call of the President.	5e. Meetings of the Executive shall be at the call of the President or Executive majority and held at a mutually agreed upon location.	6f. All committees must report to the Executive monthly. 6g. All committee members must be members in good standing
7c. For a person to be accepted as a nominee for the position of Director, that person shall be a member in good standing with the Club.	7c. For a person to be accepted as a nominee for the position of Director, that person shall be a member of the Club for a minimum of one year in good standing with the Club.	7k. Only members whose annual dues are paid by the AGM are eligible to vote.
		10c. The Director spending limit shall be an amount approved by a majority of the members at a regular scheduled general meeting. 10d. The Director spending limit is defined as the monthly amount the Directors may spend without authorization from the membership. 10e. Expenditures in excess of the spending limit, by a Director, must be discussed and approved by a majority of the Club Directors prior to a vote at a general meeting.

Repeater

Questions about linking of the 220 repeater were tabled for later discussion.

Club Net

A discussion ensued regarding adequacy of coverage of the repeater from Bellingham and South Surrey.

Membership Committee

Membership as of the date of the AGM is 100 but 3 ham class members have not yet confirmed their status.

Training Facility

A "move-in" work party was held on May 15th followed by tower installation on the May long weekend. Photos and details can be found in the June Communicator. Next steps recommended were to setup 40 and 80 meter wire antennas in the trees. An application for a Gaming grant requesting provision of equipment is to be submitted by the deadline of August 31st.

Ham Classes

John VE7TI is tentatively planning another basic ham radio course to commence in September, with a format similar to the last one.

Field Day

Extensive discussion took place regarding field day planning, particularly meals. An operator signup list was passed around.

QSL Manager

QSL Manager, Heinz Buhrig VA7AQ, reported that 13,000 contacts from the last 5 years are now in LOTW. Approx 200 SARC QSL cards remain in our inventory. Heinz reported that income received approximately balances expenditures for postage.

Election of Directors

Stan VA7NF expressed thanks to Directors Brett Garrett VE7GM, John Brodie VA7XB and Al Petersen VA7ALZ who completed their 2-year terms. This year, 5 rather than 4 Director positions are to be filled due to a premature resignation at last year's AGM; therefore 1 of the 5 positions would be for a 1 year term. The 4 Directors previously agreeing to stand and Sheldon Ward nominated from the floor, were elected by acclamation:

1. Stan Williams VA7NF
2. Jeremy Morse VE7TMY
3. Anton James VE7SSD (1 year term)
4. Bill Gipps VE7XS
5. Sheldon Ward VA7XNL

The meeting was adjourned at 9:06pm

~ Minutes prepared by Jeremy Morse VE7TMY

Only members in good standing may vote at the AGM
This requires that dues be paid for the 2017/2018 fiscal year prior to, or at, the AGM.



Note The PREOC may be activated. If so we may have to amend the location of the AGM. Members will be notified via email if there is a change of venue.

SARC **2017 Annual General Meeting**

SARC Members

Notice of Proposed Bylaw Changes

The need for Bylaw changes has been prompted by the requirements of the Community Gaming Grants Branch who, in their denial of our 2016 gaming grant application, advised that a future application will be considered only if the distinction between "full" member and "associate" member is amended to allow both classes of member to serve on the Executive Committee, so as not to limit "inclusiveness" of our organization.

Because we do wish to qualify for future gaming grants, a sub-committee was set up by the Executive to consider the scope of changes and make recommendations, which are summarized below; the changes effectively change two categories of membership, i.e. from "full member" to "licensed member" and from "associate member" to "non-licensed member" and allow both types of members to have identical privileges.

Currently Reads	Proposed Amendment
1.b. Full Member Open to persons who hold a certificate of proficiency in radio in the Amateur Experimental Service. A Full Member shall pay dues and have one vote.	1.b. Licensed Member Open to persons who hold a certificate of proficiency in radio in the Amateur Experimental Service. A Licensed Member shall pay dues and have one vote.
1. d. Associate Member An Associate Member may be any person who wishes to participate in the Club activities. An Associate Member cannot be a member of the Executive Committee. An Associate Member can be the head of a group committee or a member of a group committee. An Associate Member shall pay dues and shall have one vote.	1.d. Non-Licensed Member A Non-Licensed member may be any person who wishes to participate in the Club activities but does not hold a certificate of Proficiency in radio in the Amateur Experimental Service. A Non-Licensed Member shall pay dues and shall have one vote.
3.a. For a Full or Associate Member: When a member ceases to be in good standing. All members are in good standing except a member who has failed to pay his current annual membership fee or other subscription of debt due and owing by him to the Club within a period of three months or by submitting a letter of resignation.	3.a. For a Licensed or Non-Licensed Member: When a member ceases to be in good standing. All members are in good standing except a member who has failed to pay his current annual membership fee or other subscription of debt due and owing by him to the Club within a period of three months or by submitting a letter of resignation.
5.b. Directors shall be Full or Life members of the Club.	5.b. Directors shall be Licensed, Non-Licensed or Life members of the Club.
6.e. All Full Members, Associate Members in good standing and Life Members shall be eligible to vote.	6.e. All Licensed Members, Non-Licensed Members in good standing and Life Members shall be eligible to vote.

A motion will be made at the June 14, 2017 Annual General Meeting to amend the Bylaws of the Association in the manner described above.

The committee wishes to point out that, while deemed a critical item in terms of qualification for receiving gaming grants, the proposed changes are considered as strictly academic because SARC has not had (at least in the last 20 years) any "associate members" because persons who have an interest in amateur radio invariably will become licensed.